Can the integration of a tax compliant transfer pricing system into the management control system be Successful? Yes, it can!

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Can the Integration of a Tax Compliant Transfer Pricing System into the Management Control System Be Successful? Yes, It Can!

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Keywords transfer pricing system integration, enabling use, transfer pricing system success, survey and interview data

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1. Introduction

Transfer pricing has traditionally evolved to facilitate and influence internal decision-making within divisionally structured organizations, and it is thus an important accounting topic. Over recent decades, however, another purpose of transfer pricing has become increasingly important, namely, tax compliance. Because transfer prices determine the profits of legal entities within multinational enterprises, transfer prices can be used to minimize taxes. To hamper such tax minimization strategies, international guidelines, such as the OECD transfer pricing guidelines, govern the determination of transfer prices.

Results from analytical research show that a single transfer price cannot simultaneously fulfill both internal (internal decision-making and control) and external (tax compliance and tax burden minimization) objectives (Baldenius et al., 2004; Choe and Hyde, 2007; Hyde and Choe, 2005; Smith, 2002a). In an attempt to provide solutions to these goal conflicts, researchers have repeatedly called for the use of different transfer prices for different purposes, in particular, for the use of one set of books for tax compliance/tax optimization and another for internal management purposes (Baldenius et al., 2004; Choe and Hyde, 2007). However, survey-based findings report that firms predominantly use the same transfer price for both internal and external (tax compliance) purposes (Ernst & Young, 2001; 2003; 2005). In addition, the use of one set of books may help signal that the transfer pricing system is driven by internal control considerations and not by tax optimization purposes (Ernst & Young, 2001; 2003). Even analytical researchers acknowledge that multinational enterprises, in practice, use one set of books, "*both for simplicity and in order to avoid the possibility that multiple transfer prices become evidence in any disputes with the tax authorities*" (Baldenius et al., 2004, p. 592).

For these reasons, the advantages of decoupled over integrated tax compliant transfer prices are questionable, in particular, since transfer pricing and management control systems are highly complex and dynamic instead of exogenously given and static (the latter being common assumptions in analytical modeling). Recently, case-based studies have analyzed the consequences of implementing a single-book tax compliant transfer pricing system for the design and use of various components of the management control system (Cools, 2014; Cools et al., 2008; Cools and Slagmulder, 2009; Rossing and Rohde, 2010). However, besides these case-based studies, little empirical evidence exists on how firms address the conflict between

management control purposes and tax compliance and on the degree of integration of transfer pricing systems into management control systems from an overall perspective. As a result, Cools et al. (2008, p. 626) call for future research on the consequences of integrated transfer pricing systems.

We respond to this call and draw on Adler and Borys' (1996) concept of an enabling use of bureaucracy to examine how the integration of a single-book tax compliant transfer pricing system into the management control system is related to the perceived success of that transfer pricing system. Note that we measure transfer pricing system success based on assessments of the satisfaction with the transfer pricing system in terms of the fulfillment of both tax compliance and management control objectives. In particular, we investigate two related research questions using survey data:

(i) Can tax compliant transfer pricing system integration be positively related to transfer pricing system success as perceived by the corporate-level authorities responsible for transfer pricing?

(ii) Is this relationship mediated by enabling use of the transfer pricing system, which is reflected in repairability, transparency, and flexibility?

To shed light on these questions, we conduct an empirical study that is characterized by the following aspects. First, in contrast to previous studies on transfer pricing (for an overview, see Cools, 2014), this study employs a perspective that goes beyond the analysis of transfer pricing methods (e.g., cost-plus or resale-minus transfer prices) applied in single transactions. In particular, we analyze a firm's transfer pricing system in its entirety. This approach is in line with the reasoning of Rossing and Rohde (2014) and enables us to account for the broad area of transfer price application within multinational enterprises. Furthermore, taking a holistic view of taxpayers' intercompany transactions is in line with recent OECD developments, such as the base erosion and profit shifting (BEPS) project, and it is a consequence of the changing view of tax authorities (Ernst & Young, 2013, p. 29).

Second, to measure the level of integration between the transfer pricing system and the management control system, we use information on how strictly transfer prices enter the budget planning, cost accounting, performance evaluation and bonus systems of the responsibility centers. All of these parts of the management control system are usually seen as instruments for achieving decision-making and control in multidivisional and multinational

firms (see, for example, Horngren et al., 2015, p. 868; Kaplan and Atkinson, 2014; Zimmermann, 2013, pp. 185-188).

Third, with respect to the use of the transfer pricing system, we rely on Adler and Borys' (1996) concept of an enabling use of bureaucracy. This concept is well established in management accounting research (Ahrens and Chapman, 2004; Chapman and Kihn, 2009; Free, 2007; Wouters and Roijmans, 2011; Wouters and Wilderom, 2008) and is particularly useful for examining the simultaneous use of highly structured controls (Ahrens and Chapman, 2004, p. 276), a phenomenon that is also prevalent in transfer pricing.

Results from a partial least squares (PLS) analysis of survey data from 38 multinational enterprises indicate that the level of integration of the transfer pricing system into the management control system is positively and significantly correlated with the success of the transfer pricing system as perceived by the corporate-level authorities responsible for transfer pricing. A considerable part of this correlation is due to the mediating variables repair and internal transparency. To substantiate our survey results in terms of a robustness test, we contrast them with findings based on interviews with the corporate-level managers responsible for transfer pricing at three multinational enterprises.

Our study makes several contributions to the literature. First, our study complements analytical research (Baldenius et al., 2004; Choe and Hyde, 2007; Hyde and Choe, 2005; Smith, 2002a; 2002b) by analyzing empirical data from a *diverse* set of firms and providing new insights into the question of how multinational enterprises handle the (supposed) trade-off between the tax compliance and management control objectives of transfer pricing. Second, the results of our study can help substantiate case-based findings (Cools et al., 2008; Rossing and Rohde, 2010) by providing reliable insights into different levels of integration, use and success of transfer pricing systems. Third, our perspective on transfer pricing, which is independent of transactions and transfer pricing methods, allows us to examine differences in the *use* of the transfer pricing system. Practical implications from our research include the finding that a strong integration of tax compliant transfer prices into the management control system goes along with internal transparency and the ability to repair the transfer pricing system. In this respect, our research speaks to Rossing and Rohde (2014, p. 283), who "encourage researchers of transfer pricing to recognize that accounting is an applied discipline and should be researched accordingly."

The remainder of this article is structured as follows. The second section reviews and summarizes the related literature and elaborates the formulation of our hypotheses. The research design and data are described in the third section. The fourth section presents descriptive statistics and results from structural equation modeling along with results from additional robustness analyses and interview findings. The final section concludes the paper.

2. Theoretical Background and Hypotheses Development

2.1. Related Transfer Pricing Literature

The transfer pricing literature addresses both the management control role and the taxation issues of transfer prices. While the internal objectives of transfer pricing have traditionally been at the forefront of (analytical) researchers' thinking,[1] more recent transfer pricing studies analyze the design of transfer prices with respect to both internal *and* external (in particular tax-related) objectives in decentralized organizations (Baldenius et al., 2004; Choe and Hyde, 2007; Halperin and Srinidhi, 1991; Hyde and Choe, 2005; Narayanan and Smith, 2000). Most of these researchers either focus on a single transfer price, which would optimally balance the conflict between tax optimization and internal resource allocation (Baldenius et al., 2004), or they decouple the internally used transfer price from the "*arm's length price*" by using two sets of books (Baldenius et al., 2004; Choe and Hyde, 2007; Hyde and Choe, 2005). These findings from analytical research have advanced our understanding on the trade-offs between different transfer pricing objectives, yet these models are not able to account for the complex and dynamic nature of both transfer pricing systems and management control systems in practice. In particular, these analytical models share a common notion of a static and exogenously given management control system, a focus on a particular transaction and a disregard for variation in the level of integration of the transfer pricing system and the management control system. Moreover, these models do not incorporate how a transfer pricing system is used (in terms of transparency, repair, and flexibility).

Aside from analytical research on transfer pricing, a considerable number of empirical studies focus on transfer pricing (Cools, 2014; Rossing and Rohde, 2014). In a recent review of the empirical transfer pricing literature, Cools (2014, p. 14) identifies three research streams: early studies on the management control issues of transfer pricing, tax accounting studies and studies on the relationship between tax-compliant transfer pricing systems and the design and use of management control systems. In our literature review, we concentrate on the "early"

empirical transfer pricing studies and studies that explicitly investigate the relationship between transfer pricing and management control systems.

A considerable part of this early research on transfer pricing draws on contingency theory. In a contingency-based approach, accounting systems are designed to optimally account for the influence of both organizational (internal) and environmental (external) factors (Gordon and Miller, 1976; Gordon and Narayanan, 1984; Otley, 1980). With respect to transfer pricing, the basic research question is which transfer price is chosen given the existence of certain organizational and environmental factors.

Some highly recognized transfer pricing frameworks have evolved from the contingency school of management accounting research, namely, the frameworks developed by Eccles (1985), Emmanuel and Mehafdi (1994), and Colbert and Spicer (1995). These frameworks describe how transfer prices are influenced by the firm's strategy (Eccles, 1985), the asset specificity of the transferred goods (Colbert and Spicer, 1995) and other environmental and organizational variables (Emmanuel and Mehafdi, 1994).

However, empirical evidence on these frameworks is scarce. Survey-based studies are mainly focused on the transfer pricing method as a dependent variable and yield ambiguous results (for a meta-analysis, see Borkowski (1996)). Some researchers claim that the discrepancy between the level of the survey (firm level) and the level of the transfer pricing decision (subunit level) is the primary reason for these inconsistent findings (Boyns et al., 1999; Colbert and Spicer, 1995; Cools, 2014).

This discrepancy is overcome by case-based research that investigates transfer pricing at the subunit level (Boyns et al., 1999; Colbert and Spicer, 1995; Cools et al., 2008; Eccles, 1985; Rossing and Rohde, 2010; Van der Meer-Kooistra, 1994; Van Helden et al., 2001). However, most of this case-based research focuses on *domestic* transfer pricing and thus neglects the tax compliance role of *international* transfer pricing (Boyns et al., 1999; Colbert and Spicer, 1995; Van der Meer-Kooistra, 1994). Only Cools et al. (2008) and Rossing and Rohde (2010) investigate interrelations between a firm's international transfer pricing and its management control system. These researchers show that a single-book tax compliant transfer pricing system interacts with the design and use of various components of the management control systems, namely the overhead cost allocation, the budgeting and the performance evaluation system.

More precisely, Cools et al. (2008) find that the implementation of a single-book tax-compliant transfer pricing system results in a more coercive use of the management control system. While a higher level of transparency is achieved under the new transfer pricing system, losses in flexibility occur "due to the uniform transfer pricing policy, which need[s] to be consistently applied under all circumstances" (Cools et al., 2008, p. 625). Similarly, Rossing and Rohde (2010, p. 212) reveal "an increase in the formalization of services and a discontinuation of allocations by divisions to business units […] in order to enhance external acceptance of overhead cost allocation." In addition, based on internal accounting data from a large company, Bouwens and Steens (2016) show that although the use of full-cost transfer pricing can send upstream production into a death spiral, the retention of the price can serve as a credible commitment device to motivate managers to reduce cost. This result again illustrates the complexity of transfer pricing systems in practice for which analytical research cannot account.

Taken together, this literature review illustrates that insights into the relationship between transfer pricing and the management control system are primarily provided by case-based research. Consequently, Rossing and Rohde (2014, p. 282) conclude that "transfer pricing research should ultimately aim for statistical generalization based on the richness of data".

Our study particularly focuses on whether the level of integration of the transfer pricing system into the management control system is positively associated with the success of the transfer pricing system as perceived by the corporate-level authorities responsible for transfer pricing. In addition, we investigate the use of the transfer pricing system – enabling versus coercive – which is delineated in the following subsection (section 2.2).

2.2. Hypotheses Development

We draw on prior literature and Adler and Borys' (1996) framework of an enabling use of bureaucracy to develop our hypotheses. *Enabling* formalization *"[…] designs organizational rules that reckon with the intelligence of workers so that formal procedures need not be designed to make the work process foolproof […]"* (Ahrens and Chapman, 2004, p. 279). *Coercive* formalization, in contrast, reflects the typical top-down approach, accentuating centralization and leaving employees with a limited scope of action. Adler and Borys (1996) identify four characteristics that foster an enabling approach to management control: repair, internal transparency, global transparency and flexibility. *Repairabilty* is "the ease with which users can repair the process themselves rather than allowing the breakdown to force the work

process to a halt." (Adler and Borys, 1996: 70) *Internal transparency* provides users with "an understanding of the underlying theory of this process by clarifying the rationale of the rules." (Adler and Borys, 1996: 72) *Global transparency* provides users with "an understanding of where their own tasks fit into the whole." (Adler and Borys, 1996: 73) The last principle, *flexibility*, indicates that a certain degree of elasticity is needed in a dynamic environment with developing markets and legal amendments.

The Adler and Borys (1996) framework has been applied to various settings in management accounting research, such as the study of management control or performance measurement systems (Ahrens and Chapman, 2004; Wouters and Roijmans, 2011; Wouters and Wilderom, 2008), inter-organizational alliances (Free, 2007), transfer pricing and the use of management control systems (Cools et al., 2008) and information-system integration (Chapman and Kihn, 2009).

Our first hypothesis argues for a positive relationship between the level of integration of tax compliant international transfer pricing into the management control system and the perceived success of that transfer pricing system.[2] Our reasoning derives from the traditional role of transfer prices as facilitating and influencing internal decision-making. Transfer prices affect some of the most important management and coordination processes such as budgeting and performance evaluations of division managers, with effects on decision-making and both division and overall company profit. These elements of the management control system are usually portrayed as instruments for achieving decentralization and coordination in multidivisional and multinational firms (see, for example, Horngren et al., 2015, p. 868; Kaplan and Atkinson, 2014; Zimmermann, 2013, pp. 185-188). By providing the relevant data, transfer prices that are integrated into the management control system enhance the transparency of internal decision-making. Compared to decoupled transfer prices, integrated transfer pricing systems are often preferred "both for simplicity and in order to avoid […] any disputes with the tax authorities" (Baldenius et al., 2004, p. 592). In addition, integrated transfer pricing systems are helpful to signal that transfer prices are driven by internal considerations instead of tax optimization (Ernst & Young, 2001; 2003). Moreover, case-based research also reveals a high level of integration of tax compliant international transfer pricing into the management control system of a firm (Cools et al., 2008; Rossing and Rohde, 2010). Consequently, we formally state the first hypothesis as follows:

H1: There is a positive relationship between the level of integration of the transfer pricing system into the management control system and the success of the transfer pricing system as perceived by the corporate-level authorities responsible for transfer pricing.

Drawing on Adler and Borys (1996), we argue that the level of transfer pricing system integration fosters the enabling use of the transfer pricing system, which is reflected by the four design characteristics: repair, internal and global transparency, and flexibility. *Repair* refers to the ability to reconfigure processes if unforeseen problems occur. If tax compliant transfer prices are integrated into the management control system, inconsistencies and failures in the transfer pricing system would be detected and repaired through adjustments of the transfer pricing system. For instance, a cost-plus transfer price that does not provide the supplying division with an appropriate profit might reflect inefficiencies in the supplying division or the need for adjustments of the transfer price. Either way, managers would become aware of problematic transfer pricing through the use of transfer prices in the management control system. A similar example is provided by Cools et al. (2008, p. 622).

Moreover, if the management control system and thus the decision-making of divisional managers are affected by transfer prices, these managers need to understand how transfer prices are determined. Therefore, the second design principle for an enabling use of bureaucracy is *internal transparency*, which guarantees that users truly comprehend the nature of the system. Only if employees understand the rationale behind a rule can a deeper understanding be achieved. Such an understanding requires a thorough documentation of the transfer pricing system and access to all information related to the transfer pricing system. Therefore, the level of integration of the transfer pricing system into the management control system is positively associated with internal transparency.

In addition to internal transparency, *global transparency* is also necessary to foster an enabling use of bureaucracy. Global transparency refers to a broader understanding of a firm's actions and strategies. If transfer prices are relevant for management control purposes, managers need to understand the achieved internal and external objectives of transfer pricing and the effect of their actions not only on their responsibility center but also on the company as a whole. It is argued that such an overall perspective can prevent division managers from taking actions that could harm the company. In an enabling approach, operators have access to extensive information concerning the entire value chain. Therefore, the transfer pricing system helps to clarify the value-creation process of the firm and supports optimizing efforts by division managers to improve the profits not only of their responsibility centers but also of

the whole firm. Such a comprehensive understanding is fostered through the global transparency of the transfer pricing system, and we therefore expect to find a positive relationship between the level of integration and global transparency.

The last enabling characteristic relates to the flexible use of the transfer pricing system. In some cases, determining tax compliant and control-relevant transfer prices according to pre-set rules and internal policies might not be feasible. Instead, a certain degree of flexibility may be needed in a dynamic environment with developing markets and legal amendments. *Flexibility* refers to the ability to disregard internal policies and flexibly handle the determination of transfer prices in particular cases. Cools et al. (2008, p. 622) provide an example of such a flexible adjustment of transfer prices due to market pressure. Other exceptions may relate to the pricing of extraordinarily large orders or the entry into new markets. However, due to the statutory character of international transfer prices, such exceptions need to be carefully justified and documented. Taken together, we argue that the level of integration is positively associated with the four design characteristics of repair, internal transparency, global transparency, and flexibility. These relationships are formally hypothesized in H2a-H2d:

H2: There is a positive relationship between the level of integration of the transfer pricing system into the management control system and the enabling use of the transfer pricing system as reflected by the characteristics of (a) repair, (b) internal transparency, (c) global transparency, and (d) flexibility.

Finally, we argue that the enabling use of the transfer pricing system is positively associated with the transfer pricing system's success. If fundamental problems in transfer pricing systems cannot be corrected, the transfer prices become useless for management control purposes. Therefore, we expect repair to be positively associated with transfer pricing system success. Similarly, internal and global transparency are positively associated with transfer pricing system success because these characteristics directly support managers in their decision-making function. Moreover, global transparency ensures that the implications of local processes are visible across the entire company, and thus it fosters the alignment of divisional and corporate goals. Finally, a flexible use of transfer pricing systems is necessary to account for exceptions and thus to prevent deteriorated divisional stewardship. Taken together, the presence of each of the four characteristics is expected to boost the perceived success of the transfer pricing system.

H3: There is a positive relationship between an enabling use of the transfer pricing system as reflected by the characteristics of (a) repair, (b) internal transparency, (c) global transparency, and (d) flexibility and the transfer pricing system's success as perceived by the corporate-level authorities responsible for transfer pricing.

Figure 1 displays the structural model underlying the paper. Note that our line of reasoning applies to both firms with enabling and firms with coercive use of the transfer pricing system since we expect positive relationships between transfer pricing system integration and the four design characteristics (H2a-H2d) as well as between the four design characteristics and perceived transfer pricing system success (H3a-H3d). Thus, we expect to find enabling (coercive) use of the transfer pricing system in firms with high (low) levels of transfer pricing system integration.

Insert Figure 1 about here

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3. Research Design and Data

3.1. Sample Selection and Survey Design

We conducted a questionnaire-based survey according to the basic elements of the tailored design method by Dillman et al. (2014). Our main variables of interest are measured using a seven-point Likert-type scale, indicating the degree of agreement with the statement. Specifically, 1 refers to 'does not apply' and 7 refers to 'applies completely'. The survey collected information not only on the main variables of interest but also on the transfer pricing methods applied by the firm for different types of internal transactions. Thus, the focus of our study and our hypotheses were not readily apparent to the respondents, which limits response bias. The items measuring TPS integration, as well as the four design characteristics, were distributed throughout the questionnaire and are described in greater detail in the next section. The survey was conducted electronically. During preparation of the survey, a pre-test with managerial accounting, transfer pricing and tax experts was conducted, and some questions were adjusted based on the experts' suggestions.

The survey was sent to all companies listed on the Swiss Stock Exchange (SIX) in July 2012, except for companies in the financial services sector.[3] All of the 158 companies were first contacted by telephone. After a company agreed to participate in the survey, a questionnaire

was sent to an employee in a corporate function with detailed knowledge of the company's transfer pricing system. We targeted employees in corporate functions for several reasons. First, our model focuses on the overall transfer pricing system and not on specific transactions. This perspective is best represented at the corporate level. Second, transfer prices typically split up the profit of a business into a supplying division and a receiving division of a delivered good or service, thus resulting in a zero-sum game (for a given transaction). The transfer price represents revenue for the supplying division and cost for the receiving division. Satisfaction with the transfer pricing system can thus vary between (the respective) divisions.

Third, if transfer prices cause conflicts between the parties involved, these conflicts are typically resolved at the corporate level. Thus, the corporate level is most likely to provide an overview of such conflicts. Fourth, our measurement of the perceived success of the transfer pricing system includes both internal and external objectives, namely, tax compliance. These external objectives are best assessed at the corporate level. In total, we received 38 completed questionnaires, equaling a response rate of 24 percent. Panel A of Table 1 presents an overview of our final sample of 38 companies by industry group. Overall, the sample firms are rather evenly distributed across the nine industry groups (with a weak majority of mechanical and plant engineering (8 firms) and only 1 or 2 telecommunications, electronics and utilities firms). Thus, we do not expect to have systematic bias in our data due to industry specifics. Panel B of Table 1 shows the sample distribution by organizational level of the respondent. As expected, most of the respondents belong to the group level (n=31) with some respondents from the controlling (parent) company, subsidiary companies, and divisions within a legal entity.

Insert Table 1 about here

The average company has 4,718 employees, ranging between 235 and 26,000 employees (median 2,084). Net sales average 2.033 billion CHF with a range of 40 million CHF to 13 billion CHF. The average international portion of net sales equals 65 percent, emphasizing the importance of transfer prices with respect to profit allocation among business units.

3.2. Variables Measurement

For the measurement of the four variables reflecting an enabling use of the transfer pricing system as well as of the transfer pricing system's success, we transfer Chapman and Kihn's

(2009) measurement approaches into a transfer pricing context. For the measurement of transfer pricing system integration, we rely on literature descriptions of the use of transfer prices for management control purposes (Horngren et al., 2015; Kaplan and Atkinson, 2014; Zimmermann, 2013). All variables are designed based on the results of the principal component analysis (PCA)[4] with oblique Oblimin rotations[5] and Cronbach's alpha as a measure of internal consistency and reliability (Cronbach, 1951). To reflect the theoretical constructs, three independent PCAs are conducted: first, a PCA including the items measuring transfer pricing system integration; second, a PCA addressing the four mediating design characteristics of flexibility, global transparency, internal transparency, and repair; and third, a PCA checking the factorability of items measuring transfer pricing system success. Items that do not match with the theoretical construct are dropped to obtain latent variables that reflect the underlying theoretical model.

Insert Table 2 about here

Table 2 displays the factor loadings from the three PCAs. All of the factor loadings greater than 0.45 are highlighted in gray. According to Hair et al. (2010, p. 117), factor loadings above 0.5 are considered practically significant, and loadings above 0.70 are described as the "*goal of any factor analysis.*" Except for one item (no. 3), all of the factor loadings are above 0.70, and 16 (out of 19 items) have factor loadings of 0.75 or higher.[6] In addition, the cross loadings are rather small, with the highest (positive) cross loading equaling only 0.321 (item no. 11).

Insert Table 3 about here

For each of the variables, Table 3 presents the general definitions and measurement items used in the questionnaire along with examples from interview data. Based on the results from the PCA (Table 2), the variables are calculated as the mean values of the items that are highlighted in gray in Table 3.

Transfer pricing system integration

We include three of the initial five items to measure the level of integration between the transfer pricing system and the management control system (*TPS integration*). Primarily, a two-component solution was obtained. Because the first component, which includes the majority of the items (including item no. 1, which directly asks for the transfer pricing system integration), explains a higher proportion of the variance (0.51) and obtains a higher Cronbach's alpha (0.51), the second component is dropped. The Cronbach's alpha is rather low, which likely reflects the heterogeneous nature of the variable.[7] The eigenvalue of the factor *TPS integration* equals 1.54. *TPS integration* includes an overall judgment of the level of integration of the transfer pricing system into the management control system, the degree of integration of transfer prices into budgetary planning and the degree of integration of information from cost accounting into the determination of transfer prices.

Characteristics of an enabling use of the transfer pricing system

Repair is measured by including two of the initial four items in the PCA. These items include the ability of those responsibility centers affected by transfer pricing to initiate a revision of the transfer pricing in case of fundamental problems and their ability to hold open discussions on problems with transfer pricing. Because both items load on the same factor, that factor is considered to be repair in the subsequent analysis. Repair has an eigenvalue of 1.40, explains 13 percent of the variance and has a Cronbach's alpha of 0.66.

Measuring *internal transparency* by including all four items appears to be appropriate because they all load on the second factor (called internal transparency in the subsequent analysis). Internal transparency means that responsibility centers affected by transfer pricing know and understand the determination process, that they have access to the relevant data and to the documentation of the transfer pricing system and that the company keeps detailed records on the transfer pricing system. The eigenvalue of internal transparency equals 3.53, it explains 32 percent of the variance and its Cronbach's alpha is 0.84.

Global transparency is best reflected by two of the initial four items of the questionnaire. These items refer first to the suitability of transfer pricing systems for clarifying the value creation of each responsibility center and second to the potential for each responsibility center to compare its financial performance to that of the others. Global transparency has an

eigenvalue of 1.12, explains an additional 10 percent of the variance and has a Cronbach's alpha of 0.62.

We include three of the initial four items to measure the degree of *flexibility* in the transfer pricing system. These items relate to the disregard of internal transfer pricing policies (internal guidelines) and the flexible handling of transfer prices in particular cases. Moreover, we include a reverse-coded item for which no exceptions to the internal policies or guidelines on transfer pricing are allowed. The factor flexibility has an eigenvalue of 2.29, explains an additional 21 percent of the variance and has a Cronbach's alpha of 0.71.

Taken together, the results from the PCA indicate that the underlying theoretical constructs are appropriately reflected by the data. In particular, only five of the initial 16 items were dropped. The remaining eleven items clearly identify the four assumed mediating design characteristics of an enabling use of the MCS, explaining 76 percent of the total variance.

Perceived transfer pricing system success

Perceived transfer pricing system success (*Perceived TPS success*) is measured by five of the initial seven items. These items include assessments of the responsibility centers' overall satisfaction with the transfer pricing system, the cost-benefit analysis, the tax compliance of the transfer pricing system and the fulfillment of internal and external objectives. The TPS success factor explains 63 percent of the variance, has an eigenvalue of 3.13 and a Cronbach's alpha of 0.85. It includes the overall satisfaction with the transfer pricing system, cost-benefit considerations, the degree of compliance of the transfer pricing system with tax regulations and an evaluation of the fulfillment of the internal and external purposes of transfer pricing.

3.3. Methodological Approach

Our hypotheses on the relationships between transfer pricing system integration, the four characteristics of an enabling use of the transfer pricing system and the success of the transfer pricing system are investigated through structural equation analysis by applying the partial least squares (PLS) technique. In particular, we rely on the software SmartPLS 3.2.0 for our statistical analyses. PLS has recently gained ground in the accounting literature (e.g., Chapman and Kihn, 2009; Chong and Law, 2016; Hall, 2008; 2011; Hartmann and Slapničar, 2012; Nitzl, 2014; Nitzl and Hirsch, 2016) because it is particularly useful for analyzing complex relationships when prior theoretical knowledge on the relationships is limited and

sample sizes are rather small.[8] Therefore, it appears to be ideal for estimating the association between transfer pricing system integration and transfer pricing system success while accounting for the mediating effect of an enabling use of the transfer pricing system. Bootstrapping using 5,000 samples with replacement is applied. Following Hair et al. (2013, p. 252), the number of bootstrap cases is adjusted to the number of observations in our sample.

PLS analysis is comprised of a measurement and a structural model. To ensure the appropriate interpretation of the results from the structural model, the validity and reliability of the latent variables (i.e., the measurement model) need to be ensured (Hulland, 1999). As reported in Table 2, the factor loadings are above 0.7 for 18 (out of 19) items, and thus internal reliability is supported (Hair et al., 2011). In addition, Table 4 displays common validity and reliability measures for the latent variables of the model. Internal consistency reliability is ensured because the composite reliability of each latent variable is higher than 0.7 (Nunnally and Bernstein, 1994). Convergent validity is guaranteed because the average variance extracted (AVE) is above 0.5 for all of the variables (Hair et al., 2010). Discriminant validity is confirmed because the AVE of each latent variable is higher than its shared variance (squared correlation) with any other construct (Fornell and Larcker, 1981).[9] According to Hair et al. (2011), an item's factor loading should additionally be greater than any of its cross loadings; this condition is also fulfilled (Table 2). Taken together, all of the latent variables meet the validity and reliability criteria.[10]

Insert Table 4 about here

Because both the independent and the dependent variables from the model are obtained from the same survey (answered by the same person in the same measurement context), common method variance (CMV) may bias the results (Podsakoff et al., 2003, p. 885). Therefore, we followed several procedures recommended in the literature to avoid CMV as far as possible. *Ex ante*, we tried to reduce CMV by guaranteeing respondents anonymity, using neutral wording, reducing comprehension problems by wording questions as precisely as possible[11] (Harrison et al., 1996; Lindell and Whitney, 2001) and integrating some questions worded with an opposing orientation. *Ex post*, the mediating role of our design characteristics adds complexity to our model, reducing the influencing potential of CMV. Moreover, we perform some statistical tests in order to ensure that our findings are not solely driven by CMV.

First, we employ Harman's single-factor test by performing a PCA (without rotation) including all items of our model.[12] Following Podsakoff and Organ (1986), a single resulting factor or a factor accounting for the majority of covariance between the items would signal the prevalence of CMV. However, the PCA reveals six factors with eigenvalues greater than one, and the first factor accounts for 32 percent of total variance only, indicating that CMV is not pervasively affecting our results. Second, another promising approach to control for CMV is the use of a marker variable (Lindell and Brandt, 2000; Lindell and Whitney, 2001). A marker variable should theoretically not be correlated to the other variables (at least to one) used in the model; if there are observed correlations between the marker variable and the other variables, these are assumed to be caused by CMV. Such a procedure allows researchers to parcel out the effect of CMV from observed relationships (Podsakoff et al., 2003). Therefore, using financial performance as a marker variable,[13] we test the biasing effect of CMV on our results. After controlling for CMV, the correlations between TPS integration and TPS success remain in a range between 0.37 and 0.49, the correlations between repair and TPS success remain in a range between 0.52 and 0.62, and the correlations between internal transparency and TPS success remain in a range between 0.54 and 0.62.[14] Considering these stable and highly significant values, we conclude that CMV does not primarily drive our results.

4. Results

4.1. Descriptive Statistics

The descriptive statistics for our model variables are presented in Table 5. Panel A of Table 5 gives an overview of the raw data. Variables are calculated as the mean values of the items and theoretically range between 1 and 7. On average, the transfer pricing system appears to be well integrated, and firms perceive their transfer pricing systems as being rather successful (mean values of 5.00 and 5.08, respectively). This finding supports our reasoning that transfer prices are indeed (well) integrated into the management control system and not decoupled. Note that we only ask for *international* transfer prices and that the sample companies have, on average, 65 percent of total sales internationally. In contrast to these rather high mean values for TPS integration and TPS success, the mean values of the four design characteristics are lower, ranging between 3.84 and 4.76. Within these four variables, we observe the highest mean value for repairabilty, indicating that transfer pricing systems are generally repairable. The lowest mean value corresponds to global transparency, indicating that the transparency of

transfer prices and of their effects across different responsibility centers is rather limited. Moreover, the flexible use of the transfer pricing system is not widespread, which may reflect concerns regarding potential disputes with the tax authorities.

Insert Table 5 about here

For further analyses, variables are computed as the average standardized response of all items loading above 0.45 on a particular factor (Table 5, Panel B), which is considered to be an appropriate critical value for exploratory research (Tabachnick and Fidell, 2001).[15]

Panel C of Table 5 presents the sampling of our firms along two dimensions: the formalization type (coercive versus enabling) and the level of TPS integration (low versus high). Our variable formalization is measured based on the average of the standardized variables for the four design characteristics. We classify firms with formalization below (equal to or above) zero as coercive (enabling) organizations. Likewise, we classify firms with TPS integration below (equal to or above) zero as low integration (high integration) organizations. According to this classification, 20 of our sample firms have a low level of TPS integration, whereas 28 firms have a high level of TPS integration. Of the firms with a low level of TPS integration, 65 percent have coercive formalization. Similarly, 72 percent of the firms with a high level of TPS integration have enabling use of the TPS system. These first insights support our reasoning that a high level of TPS integration is in line with the use of an enabling transfer pricing system.

Panel D of Table 5 presents Pearson correlation coefficients for these standardized variables. As expected, TPS integration is positively and significantly correlated with internal transparency, repair and TPS success. Moreover, TPS success is also positively and significantly correlated with repair and internal transparency. While there are also significant relationships between our four design variables for an enabling use of the *transfer pricing system* (in particular between repair and internal transparency, global transparency and flexibility as well as between global transparency and repair), the corresponding variance inflation factors do not indicate multicollinearity problems. Overall, the correlation statistics provide univariate evidence that supports our expected relationships between TPS integration, an enabling use of the transfer pricing system and TPS success. In contrast to our expectations, global transparency is negatively correlated with TPS success, but this relationship is not significant.

4.2. Results from Structural Equation Modeling

Our structural equation model tests the hypotheses that transfer pricing system integration is positively related to transfer pricing system success (H1), that transfer pricing system integration is positively related to an enabling use of the system as reflected by repair, internal transparency, global transparency, and flexibility (H2a-H2d) and that an enabling use of the transfer pricing system as reflected by its four design characteristics is positively related to its success (H3a-H3d). Table 6 presents our results on path coefficients, corresponding levels of statistical significance, multiple squared correlations (mult. R^2) and effect sizes (f^2).

Insert Table 6 about here

With respect to the first hypothesis H1, the results of the PLS analysis indicate a positive association between the integration of the transfer pricing system into the management control system and transfer pricing system success (Table 6, Panel A). However, the link is significant at the 0.10 level only (one-tailed test). Therefore, we find only weak support for hypothesis 1. Nevertheless, the total effect of TPS integration on TPS success – including the indirect (mediating) effects through internal transparency, global transparency, repair, and flexibility – is substantial and highly significant, thereby emphasizing the overall importance of transfer pricing system integration (coefficient of 0.478, p-value of 0.000, untabulated). Thus, as assumed by our research design, the association between TPS integration and TPS success appears to be mediated through internal transparency, global transparency, repair, and flexibility.

Regarding the second set of hypotheses on the relationship between TPS integration and the four characteristics of an enabling use of the transfer pricing system (H2a-H2d), the results of the PLS analysis indicate positive and significant associations for three of the four design variables (Table 6, Panel A). In particular, TPS integration is positively related to repair (0.336, $p<0.05$), internal transparency (0.388, $p<0.01$), and global transparency (0.246, $p<0.10$). These findings strongly support hypotheses H2a, H2b and weakly support H2c. While the relationship between TPS integration and flexibility is also positive, it is not significant and thus does not support hypothesis H2d (0.183, $p>0.10$).

Panel B of Table 6 presents the results for the third set of hypotheses (H3a-H3d) along with the effect sizes and the multiple squared correlations for TPS success. Consistent with H3a

and H3b, there are significant positive relationships between repair and TPS success (0.450, $p<0.01$) as well as between internal transparency and TPS success (0.321, $p<0.05$). However, global transparency and flexibility both have a negative (but not significant) association with TPS success. Therefore, we find only partial support for our third set of hypotheses. The multiple R^2 for TPS success equals 0.605, indicating that TPS integration and the four variables of an enabling use explain 61 percent of the variance of TPS success (adjusted R^2=0.543). Compared with similar studies (e.g., Chapman and Kihn, 2009; Hall, 2008; 2011), this value can be considered rather high, thereby indicating a good fit for our model.

Overall, the results of the PLS analysis partially support our theoretical model. In particular, our results provide evidence not only for a direct positive relationship between TPS integration and TPS success but especially for indirect positive relationships through the characteristics repair (0.163, p=0.065) and internal transparency (0.129, p=0.076). This result is also reflected by a Cohen's effect size f^2, equaling 0.133 for TPS integration, 0.360 for repair and 0.181 for internal transparency.[16] In other words, stronger integration of the transfer pricing system into the management control system is associated with the higher success of the transfer pricing system, and this relationship is further enhanced through the enabling characteristics repair and internal transparency. However, although statistically not significant, we find negative associations between global transparency (as well as flexibility) and TPS success. One potential reason could be that the increased transparency of the transfer pricing system across different responsibility centers generates additional conflicts between the managers of these responsibility centers because the value creation of each responsibility center becomes more visible. The insignificant result for flexibility might reflect concerns about potential disputes with the tax authorities that are associated with a flexible use of the transfer pricing system.[17]

4.3. Robustness Analyses

We perform several additional analyses to investigate the robustness of our survey-based findings. First, we address concerns regarding the computation of our variables and our approach of separately calculating the measurement and the structural model. There is a controversy in the literature regarding the different methods for estimating factor scores. In our analysis, we rely on the common approach of computing the variables as the average standardized response of items (see also Chapman and Kihn, 2009). Alternatively, we use regression-based factor scores as an initial sensitivity check for our results. Following such a

procedure means that a factor is no longer described as the average of the standardized items with high loadings only but is rather described by each item, while the weight of an item directly depends on the size of its respective factor loading (Hair et al., 2010, p. 117). The results (untabulated) of the path model analysis based on bootstrapping with 5,000 drawings using regression-based factor scores are similar to our initial results. In particular, there are no differences with respect to the direction, but there are differences with respect to the magnitude for some of the estimated effects, confirming our main findings.

Second, we conduct a PLS analysis using the items from the main model before standardization. With this procedure, SmartPLS optimizes the complete (i.e., measurement and structural) model including the weighting of the single items. Again, the results (untabulated) are similar to our main analyses with one exception. The direct relationship between TPS integration and TPS success becomes insignificant, and TPS integration is thus positively associated with TPS success only through an enabling use of the transfer pricing system.

Third, our initial step-wise procedure of first performing principal component analyses and second testing our hypotheses based on the PLS technique is criticized by some researchers (Nitzl and Chin, 2017). Therefore, we next optimize the complete model in SmartPLS including the selection of the unstandardized items used to specify the latent variables of our model. Following such a procedure slightly changes the measurement of global transparency and flexibility, but the main results remain robust. In particular, TPS success is still positively associated with repair and internal transparency, while the total effect of TPS integration on TPS success – including the indirect (mediating) effects – remains unchanged (coefficient of 0.478, p-value of 0.000, untabulated). Taken together, results from these robustness analyses indicate that neither the computation of our variables nor the step-wise procedure substantially impacts our main findings.

Next, one could argue that our results may be biased due to omitted variables, and we therefore include two additional control variables that may impact TPS success, namely the number of profit centers (#Profit centers) and the proportion of foreign sales (Foreign sales).[18] The number of profit centers is a rough proxy for the number of internal transactions, and the proportion of foreign sales is a rough proxy for the degree of internationalization of a company. Taken together, these variables are a crude indicator of the importance of internal cross-border transactions for the whole company. The results reveal no substantial differences in the associations between TPS integration, the characteristics of an

enabling use and TPS success, yet both control variables are positively associated with TPS success. One potential reason for this finding could be that the higher importance of internal cross-border transactions translates into more sophisticated transfer pricing systems, which in turn are associated with higher TPS success.

Next, we re-run our analyses based on an alternative measurement of our dependent variable *TPS success* that captures the perceived conflicts between various transfer pricing objectives. Our new variable, *TPS conflicts,* is based on five of seven initial items that measure the level of perceived conflict between transfer pricing objectives. Primarily, a two-component solution was obtained. Again, we use the factor that includes the majority of items (including the item that directly asks for the overall level of conflict between transfer pricing objects). The factor *TPS conflicts* explains 51 percent of the variance and has an eigenvalue of 2.57 and a Cronbach's alpha of 0.76. In addition to an overall judgment of conflicts between different transfer pricing objectives, it further includes particular assessments of conflicts between coordination and internal profit determination, coordination and tax optimization, internal profit determination and tax compliance as well as internal profit determination and tax optimization. The results from the PLS analysis based on bootstrapping with 5,000 drawings are displayed in Panel A and Panel B of Table 7.

Insert Table 7 about here

Consistent with our expectations, the path coefficient from TPS integration to TPS conflicts is negative but not significant. However, the total effect, including the indirect (mediating) effects, becomes significant at the 10 percent level (coefficient of -.255, p-value of 0.065, untabulated). The results thus suggest that the integration of the transfer pricing system into the management control system is associated with reduced conflict between different transfer pricing objectives. Again, similar to our baseline model, the relationship is mediated through the design variables of the transfer pricing system. However, the relationship between TPS integration and TPS conflicts appears to be much weaker than the relationship between TPS integration and TPS success. One reason for this observation might be that we dropped variables related to internal profit determination when considering the measurement of TPS integration but included them when considering TPS goal conflicts. This could also be an explanation for the much lower multiple R^2 (0.212) in this new model. Panel B of Table 7 presents the results for the third set of hypotheses (H3a-H3d). Surprisingly, the path coefficient between repair and TPS conflicts becomes positive. However, the effect is not

significant (coefficient of 0.160, p-value of 0.244). In contrast, the results suggest that the path between internal transparency and TPS conflicts, both in terms of magnitude and significance, is the strongest. This finding is also reflected by obtaining the highest Cohen's effect size f^2 for internal transparency. Therefore, a higher degree of internal transparency appears to be associated with a lower level of conflict between transfer pricing objectives. By contrast, global transparency and flexibility appear to be unrelated to TPS goal conflicts. Overall, the results are generally consistent with our findings from the main model (except for repair).

Next, we estimate our model by ordinary least squares (OLS) because most researchers are more familiar with this technique for estimating relationships. To test the structural model of our hypotheses, we run six independent OLS analyses. The results are presented in Table 8. Although the estimated coefficients and the t-statistics differ from our PLS analysis (due to the different estimation model), the results are similar to the results from our main model. In particular, we obtain positive and significant associations between TPS integration, repair and internal transparency and TPS success. Not controlling for the use of the transfer pricing system, the total effect of TPS integration on TPS success equals 0.530 and is highly significant (p-value of 0.002). However, only 55 percent (0.291/0.530) of this total effect can be explained by the direct effect of TPS integration, while 45 percent of the total effect can be attributed to the mediating variables. As in our PLS model, the indirect effects of TPS integration on TPS success through repair (coefficient of 0.168, p-value of 0.037) and internal transparency (coefficient of 0.138, p-value of 0.043) remain similarly substantial and highly significant.

Insert Table 8 about here

Finally, we address concerns regarding the validity of the responses. Since the respondents are primarily employed at the corporate level, one could argue that the respondents are biased toward the positive elements of the transfer pricing system. In particular, the perceived success of the transfer pricing system might be assessed differently (better) at the corporate level where the transfer pricing system is defined than at the divisional level where the transfer pricing system is actually used. We therefore investigate the mean value of Perceived TPS Success for the different organizational levels (see Panel B of Table 1). The results reveal a mean value of -0.054 for the respondents that belong to the group level, 0.724 for the

respondents that belong to a controlling (parent) company, 0.224 for respondents from a subsidiary company, 0.377 for respondents from a division within a legal entity, and -0.815 for a respondent from other levels. These results do not indicate that respondents from the group level are systematically biased in their assessments of the success of the transfer pricing system. In addition, in the next section of the paper, we provide insights from interviews with respondents from three multinational enterprises that provide a more holistic picture.

Taken together, the results from these additional analyses unanimously support the robustness of our main results.

4.4. Affirmative Testimonies from Interview Data

To further substantiate our findings, we provide additional insights into the transfer pricing systems of three multinational enterprises. In particular, we illuminate potential conflicts and problems in the use of transfer pricing and the perceived success of the transfer pricing system.

We use theoretical sampling (Eisenhardt, 1989) to identify useful cases for our investigation based on the following criteria. First, we limit our potential sample to the manufacturing industry to enhance the comparability of our findings. Second, we focus on multinational enterprises with a substantial number of internal cross-border transactions, as essentially only these enterprises face a goal conflict between tax compliance and management control. Third, we aim to use enterprises that have implemented a single set of transfer pricing books. Again, only in this case does the goal conflict theoretically become evident. Moreover, focusing on one set of books enhances the comparability of our findings.

Within each enterprise, we conducted one interview that lasted, on average, two hours. Regarding the interview subjects, we focused on those persons responsible for the transfer pricing system at the corporate level. In addition, we interviewed a divisional manager (company A) and a corporate controller (company C). The interviews were conducted between October and December 2016. The semi-structured interviews were guided by questions based on our survey questionnaire and our results. The questions were open enough to allow for unexpected findings. For reasons of simplicity, we focused on internal transactions involving tangible assets and excluded the licensing of intellectual property (IP) from our analysis. The interviews were tape-recorded and transcribed.

Panel A of Table 9 provides an overview of the sample companies A, B, and C with respect to the firm size in terms of sales, internationalization, organizational structure, and value chain.

Insert Table 9 about here

Panel B of Table 9 outlines the transfer pricing systems of the three case companies. The organizational structure of company A with its various profit centers is reflected in a decentralized approach to transfer pricing. The central policy on transfer pricing only states that transfer prices must comply with the arm's length principle. Transfer prices are negotiated between profit centers (based on price lists or individual prices for customer specific products). This approach of internal negotiations on the transfer price reflects the negotiating power and the functions and risks of the involved profit centers. The transfer pricing systems of companies B and C are rather contrary to the decentralized approach to transfer pricing seen in company A. Both companies have comprehensive and detailed transfer pricing policies at the corporate level that govern the determination of transfer prices. These policies determine the transfer pricing method with respect to typical intra-company transactions including the cost basis, markups, margins, and handling of currency conversions.

Next, we provide descriptive evidence for the (enabling) use of a (single) transfer pricing system, which must simultaneously fulfill tax compliance and management control purposes. Based on the findings from analytical research, which recommends the decoupling of transfer prices to avoid conflicts between tax compliance and management control, we directly asked our interviewees about the existence of such goal conflicts in their companies. Company A's interviewees observe no direct goal conflict between the two objectives; on the contrary, company A is convinced that tax authorities accept the negotiated transfer prices as being tax compliant because they correspond with their decentralized approach to controlling the group. Company A's interviewee stated: "*With respect to tax compliance, the total result of the legal entity is crucial. If this result is feasible, there are usually no further discussions with the tax authorities. […] Moreover, keeping one set of books is a benefit with respect to tax compliance, since we can always argue that there are not manipulations for tax optimization purposes*." However, the decentralized approach of negotiating transfer prices is accompanied by the high potential for conflict between the negotiating parties. If the internal transactions occur within the same business unit, the internal conflicts are solved by the business unit

manager. If different business units are involved, potential conflicts are solved by division or corporate representatives. Moreover, there is an arbitration panel that resolves conflicts that occur between the involved parties *after* transfer prices are determined.

Company B's interviewee also observes no conflict between tax compliance and management control: "*Because the transfer pricing system has been designed in accordance with basic economic principles and to facilitate decentralized decision-making, it is in accordance with tax regulations. … Thus, we assume that if our business decisions are reasonable, then these decisions must also be reasonable with respect to tax compliance.*" The high integration of the transfer pricing system with the management control system in combination with the ability to repair the transfer pricing system facilitates internal decision-making and reduces potential conflicts between the involved parties. For instance, transfer prices are integrated into the budgeting process of the company. If the planning results in a loss for some legal entities due to the planned transfer prices, the problem is escalated to a transfer pricing committee, which can revise the transfer pricing system accordingly. Due to the integration with the budgetary planning, such problems can be solved in advance. The company also provides insights into the practical handling of another problem of transfer pricing: the obfuscation or "swelling" of the internal cost structure that results from the use of the cost-plus method in multi-stage production processes. Such obfuscation is prevented by applying the markup of the transfer price solely to the production costs of each production center instead of to the total costs.[19]

Last, but not least, company C's interviewees perceive no conflict between management control and tax compliance for two reasons. First, the company's primary objective with respect to transfer pricing is tax compliance. Second, in addition to tax compliance, the main objective of the transfer pricing system is "*to not distort decentralized decision-making.*" To ensure this, transfer prices do not affect the performance evaluation of functional center managers because they are evaluated based on the business unit's residual income. The transfer pricing policy is detailed and comprehensive. The low degree of flexibility results in few conflicts between functional centers, business units or legal entities. Within each business unit, there are transfer pricing officers who are responsible for adherence to the transfer pricing policy. Problems are discussed with the corporate tax department on a monthly basis. In the case of severe conflicts, there is an escalation to the management board of the company, which ultimately resolves the conflict.

To gather more insights into the finding that neither global transparency nor flexibility is found to significantly mediate the relationship between transfer pricing system integration and

transfer pricing system success, we directly asked our interviewees about these relationships in their enterprises. The results from our interviews reveal differences in the role of flexibility and global transparency between centralized and decentralized transfer pricing systems. As expected, the interviewees from the companies with a centralized transfer pricing system emphasize that flexibility is detrimental to tax compliance and thus to the perceived success of the transfer pricing system. In contrast, in the company taking a decentralized approach, flexibility is, by definition, part of the transfer pricing system and thus important for its success. However, it must be noted that the central transfer pricing policy of the decentralized company only states that transfer prices must comply with the arm's length principle, which allows for much more flexibility than a comprehensive and detailed internal transfer pricing policy. Another discrepancy is that, for the two companies with a more centralized approach, both internal and global transparency are important for the success of their transfer pricing system. For the company with the decentralized approach, only internal (but not global) transparency is perceived as being important. Thus, the different level of decentralization seen in the companies in our sample might explain the insignificant results for global transparency and flexibility that we obtain from the PLS analysis. In none of the case companies did we find severe conflicts between management control and tax compliance, which is partly due to the high integration between the transfer pricing system and the management control system.

In sum, there is substantial descriptive evidence supporting the presumed enabling use of a transfer pricing system through which firms are able to fulfill tax compliance and management control at the same time. Moreover, this result was confirmed by officers responsible for transfer pricing systems at the corporate level, by a divisional manager (company A) and by a corporate controller (company B), which mitigates the concern that the perceived success of a transfer pricing system is systematically over-evaluated by respondents from the corporate level. In particular, different assessments are most likely to occur within strongly decentralized organizations. However, we find no support for the hypothesis that the success of the integration is overstated by people from the corporate level of company A (nor do we find any for the other two companies). Moreover, the short rudimentary descriptions illustrate the complexity of transfer pricing systems in practice and of their integration into the management control system. All of the interviewees agreed that monitoring and documenting transfer prices on a transaction-by-transaction basis is impossible due to the huge number of transactions. Tax audits therefore examine the tax compliance of the firms' transfer pricing systems from an overall perspective and examine the appropriateness of the global profit

allocation and of internal transfer pricing policy, making the overall perspective of the corporate level more dominant.

5. Conclusions

This paper examines how the integration of a single-book tax compliant transfer pricing system into the management control system affects the perceived success of the transfer pricing system. While results from the analytical transfer pricing literature suggest the decoupling of transfer prices to overcome conflicts between tax compliance and management control, we draw on the theoretical framework of Adler and Borys (1996) and suggest that potential conflicts may be overcome by an enabling use of the transfer pricing system. In particular, we hypothesize that the level of transfer pricing system integration is positively correlated with its success and that this relationship is mediated through an enabling use of the system, which is reflected in the characteristics of repair, internal transparency, global transparency, and flexibility.

Based on a sample of 38 Swiss multinational enterprises, the results from structural equation modeling using the PLS technique partly support our reasoning. In particular, transfer pricing system integration is indeed positively associated with transfer pricing system success, and this relationship is mediated through repair and internal transparency. Both characteristics support an enabling use of the transfer pricing system because managers can truly understand how the transfer prices are determined and are able to intervene if fundamental problems occur. Obviously, these characteristics help to avoid deteriorated management control in an integrated transfer pricing system. However, neither global transparency nor flexibility is found to significantly mediate the relationship between transfer pricing system integration and transfer pricing system success. In the case of transfer pricing, it thus appears that global transparency, due to the enhanced comparability of value creation across responsibility centers, potentially fuels conflicts between responsibility centers and thus is negatively related to transfer pricing system success. With respect to flexibility, we believe that the disregard of internal transfer pricing policies may be detrimental to the purpose of tax compliance and is thus negatively associated with transfer pricing system success. Instead firms may aim to generally describe exceptions known ex ante in the transfer pricing policies or to adjust the internal guidelines to formally account for deviations.

Our survey-based findings are substantiated by additional insights into the transfer pricing systems of three multinational enterprises. The case companies are multinational companies in the manufacturing industry with substantial internal cross-border transactions that use a single set of transfer pricing books. One company applies a decentralized approach of negotiated transfer prices, while the other two companies apply a centralized approach with detailed internal transfer pricing guidelines that govern the determination of transfer prices. Tax compliance is the primary transfer pricing objective for all three firms. As expected, we find internal transparency and the potential to repair the transfer pricing system in the case of fundamental problems to be important factors in the success of integrated transfer pricing systems. However, the benefit of global transparency and of the flexible use of the transfer pricing system might depend on the degree of centralization in the approach. Whereas greater global transparency and less flexibility appear to be beneficial for centralized approaches, the opposite may be true for decentralized companies.

Nevertheless, our results should be interpreted cautiously, as our study is subject to several limitations, which give rise to future research possibilities. Specifically, the typical limitations of survey-based research apply, namely, measurement error and nonresponse error (Visser et al., 2000). First, all variables of interest are latent constructs, and our study thus requires the development of new measurements. Although the validity and reliability of our latent variables are generally satisfactory, future research could further improve some of our measurements, in particular, that of transfer pricing system integration as well as the success of the transfer pricing system. Moreover, both dependent and independent variables are obtained through the same survey, creating the potential for CMV. We investigate this concern in the robustness section of this paper (section 4.3) and find no indication that our results are severely biased due to CMV. In addition, our questionnaire is addressed to employees at the corporate level, which allows us to capture an overall view on transfer pricing. We thus cannot completely rule out that our respondents are systematically biased toward the positive elements of the transfer pricing system. While we attempt to mitigate this concern through insights gained from interviews with respondents from multinational enterprises, future research could involve multiple points of view from the same company by addressing both corporate level managers and profit center managers.

Second, our results are based on a limited number of observations from one country. However, because national transfer pricing legislation in Switzerland completely adheres to that of the OECD and there is no supplementary transfer pricing legislation, the restriction to

one country could also enhance the generalizability of our results across countries without specific national transfer pricing legislation. In addition, we employ the PLS methodology, which is particularly useful for small sample sizes. Another concern may arise from the focus on a single point in time, which does not yield insights into the development of transfer pricing systems over time or provide causal evidence. Further research could therefore investigate whether our findings also hold for companies from other countries and/or examine causal effects based on longitudinal data.

Third, this study applies to the totality of intercompany transactions instead of focusing on single transactions. Such an approach enables us to provide a more holistic picture of transfer pricing in practice and is also in line with a recent call of Rossing and Rohde (2014). Nevertheless, it hampers the comparability of our findings with prior survey-based research on transfer pricing. Despite this limitation, we are confident that our study adds a new and important perspective to the ongoing discussion on transfer pricing. Both survey-based and case-based research could build on our model and more closely investigate the relationships between transfer pricing system integration and an enabling use of the transfer pricing system. Moreover, the results from our interviews indicate that it might be particularly fruitful to consider the level of centralization of the transfer pricing system when further investigating the integration of the transfer pricing system into the management control system.

Notes

1 The "standard" transfer pricing model was introduced by Hirshleifer (1956). Subsequent studies incorporate information asymmetry (e.g., Banker and Datar, 1992; Ronen and Balachandran, 1988) and incomplete contracting (e.g., Edlin and Reichelstein, 1995). A detailed review of the analytical transfer pricing literature is provided by Göx and Schiller (2007).

2 In this context, Rossing and Rohde (2014) refer to the term “transfer pricing system performance” and distinguish between four different performance dimensions, namely functional, economic, organizational, and strategic performance.

3 Companies from the financial services sector were excluded because of fundamental differences in the value creation process and thus in internal transactions compared with companies from other industries.

4 The Bartlett test of sphericity supports the fit between the model and the correlation matrix for all variables ($p < 0.000$). The Kaiser-Meyer-Olkin measure suggests sampling adequacy for all factor analyses with a measure of sampling adequacy (MSA) value above 0.588.

5 Because the underlying theoretical model does not assume that the constructs are uncorrelated, the oblique rotation method is the most suitable (Hair et al., 2010).

6 For a sample size of 50, a 0.05 significance level and an 80 percent power level, factor loadings above 0.75 are considered significant (Hair et al., 2010, p. 117). Therefore, the critical value of a factor loading to meet the criteria mentioned would be slightly increased for a sample size of 38. However, many of the factor loadings would still be above or at least be approximately at the threshold value.

7 Hair et al. (2010, p. 125) suggest a Cronbach’s alpha of 0.60 for exploratory research as the critical value while stressing the inflation of Cronbach’s alpha due to an increase in the number of items. Keeping in mind that only 3 items are used and that a broader range of the sample can further inflate the alpha statistic (Cortina, 1993), an alpha statistic of 0.51 is judged to be low but acceptable.

8 Specifically, Chin and Newsted (1999) show that the PLS method produces feasible results starting with a sample size of 20 observations.

9 Table 4 therefore displays the maximum shared variance for each variable.

10 To check for multicollinearity of the latent variables, the variance inflation factors are calculated. The factors range from 1.10 to 1.44 (with a mean of 1.31) and thus do not indicate any problems (threshold values are between 5 and 10).

11 Therefore, a pretest of the survey was conducted with experts in the topic in order to adjust any questions that may have initially been difficult to understand according to their suggestions.

12 Note that the factor analysis includes all 19 items used to measure TPS integration, repair, internal transparency, global transparency, flexibility and TPS success.

13 Financial performance is measured by three items and has a Cronbach’s alpha of 0.95. The items ask for the respondents’ assessment of the firm’s return on sales, sales growth and financial performance in comparison to the firm’s competitors.

14 Note that there are different procedures to identify the concrete value of CMV for a correlation, which in turn result in different values for the respective correlation coefficients.

15 Even lowering this critical value to 0.35 does not impact our results with respect to the variable compositions.

16 Note that effect sizes of 0.02, 0.15 and 0.35 are interpreted as small, medium and large according to Cohen (1988).

17 For the negative (and not significant) associations between global transparency (as well as flexibility) and TPS success, see also our affirmative testimonies from interview data below.

18 Note that we include the standardized values of these variables in the PLS analysis.

19 The total costs include material and production costs. Material costs in turn include the costs of internal products (i.e., the transfer prices paid to the upstream production centers).

Table 1. Sample distribution

Panel A: Sample distribution by industry group By industry	N
Mechanical and plant engineering	8
Pharma/medical and bio technology	5
Transport/logistics/public transportation	5
Building and raw materials/chemistry/synthetics	5
Consumer goods	4
Utilities	2
Electronics	2
Telecommunications	1
Other	6
Total	38
Panel B: Sample distribution by organizational level By organizational level	
Group level	31
Controlling company	2
Subsidiary company	3
Division within a legal entity	1
Other	1
Total	38

Panel A of Table 1 reports the sample distribution by industry group. Panel B of Table 1 reports the sample distribution by organizational level.

Table 2. Principal component analysis (Oblimin rotated)

No.	Item	TPS Integration	Repair	Internal Transparency	Global Transparency	Flexibility	Perceived TPS Success
1	Our transfer pricing system is fully integrated into the management control system of our company.	0.765					
2	Transfer prices are incorporated as cost or sales prices into the budgetary planning of our profit centers.	0.762					
3	We integrate information from cost accounting into the determination of transfer pricing.	0.607					
4	If fundamental problems occur, the responsibility centers (e.g., profit centers) affected by transfer pricing initiate a revision of the transfer pricing.		0.806	0.125	0.070	0.054	
5	We openly discuss problems with transfer pricing in our company.		0.742	0.197	0.205	-0.053	
6	Responsibility centers (e.g., profit centers) affected by transfer pricing know and understand how transfer prices are determined in our company.		0.284	0.799	-0.063	0.032	
7	Responsibility centers (e.g., profit centers) affected by transfer pricing have access to the relevant data (e.g., costs) that affect transfer prices.		-0.031	0.812	-0.082	0.083	
8	Our company keeps detailed records on our transfer pricing system.		0.266	0.750	-0.271	-0.065	
9	Responsibility centers (e.g., profit centers) affected by transfer pricing have unlimited access to documentation on our transfer pricing system.		-0.041	0.800	0.219	-0.041	
10	Our transfer pricing system helps to clarify the value creation of each responsibility center.		0.013	0.124	0.832	0.147	
11	Due to our transfer pricing system, we are able to compare the financial performance of each responsibility center with that of other centers.		0.321	-0.377	0.778	-0.079	
12	In particular cases, we can disregard our internal guidelines on transfer pricing to determine transfer prices.		-0.337	0.130	0.250	0.808	
13	In particular cases (e.g., major orders), our transfer pricing is flexibly handled.		0.251	0.200	0.041	0.768	
14	There are no exceptions to our internal guidelines/regulations on transfer pricing (reverse-coded item).		0.176	-0.448	-0.186	0.791	
15	Overall, we are very satisfied with our transfer pricing system.						0.836
16	Overall, the benefits of our transfer pricing system outweigh the costs.						0.788
17	Our transfer pricing system complies completely with tax regulations.						0.717
18	Overall, our transfer pricing system achieves our internal objectives for transfer pricing completely.						0.835
19	Overall, our transfer pricing system achieves our external objectives for transfer pricing completely.						0.774

Table 3. Variable definitions

Variable	
TPS Integration	General definition: The integration of a tax compliant transfer pricing system into the management control system in terms of the scope and intensity of using tax compliant transfer prices for management control purposes Operationalization for the questionnaire: • Our transfer pricing system is fully integrated into the management control system of our company. • Transfer prices are incorporated as cost or sales prices into the budget planning of our profit centers. • We integrate information from cost accounting into the determination of transfer pricing. • Our transfer prices influence the performance evaluation of our profit centers. • Our transfer prices influence (indirectly) the variable compensation of the management of the responsibility centers (e.g., profit centers). Examples/quotes from interview data: • Tax compliant transfer prices are part of cost accounting, the budget planning of divisions, the profitability measure for the value chain, the EBIT of a legal entity (Firm A) • The tax compliant transfer price is part of the OVC (Operating Value Contribution) (Firm C)
Repair	General definition: Inconsistencies and failures in the transfer pricing system would be detected and repaired through adjustments of the transfer pricing system; for instance, a cost plus transfer price that does not provide the supplying division with an appropriate profit might be adjusted Operationalization for the questionnaire: • Ideas for improvement on transfer pricing by the responsibility centers (e.g., profit centers) affected by transfer pricing are very welcome. • If fundamental problems occur, the responsibility centers (e.g., profit centers) affected by transfer pricing initiate a revision of the transfer pricing determination. • If original conditions change, the responsibility centers (e.g., profit centers) affected by transfer pricing initiate a revision of the transfer pricing determination. • We openly discuss problems with transfer pricing in our company. Examples/quotes from interview data: • If fundamental problems occur, divisions or business units can initiate a revision (Firm A) • Most importantly, the transfer price must enable the sales unit to make sales, more precisely, the sales they should make (Firm A) • If there is a problem (or a change in the business model), then it's discussed in the TPS working groups and/or in the TPS board. Working groups have a meeting once a week or monthly depending on the agenda; the TPS board meets monthly. Decisions may lead to organizational changes or a change of the TPS policy (Firm B) • If, in exceptional cases, well-founded deviations from the TPS policy occur, then the deviation will be discussed in the tax meetings and usually the deviation will become a standard (Firm C)

Variable	
Internal Transparency	General definition: The transfer pricing system is comprehensively documented; (decentralized) management understands how transfer prices are determined and has access to all relevant data Operationalization for the questionnaire: • Responsibility centers (e.g., profit centers) affected by transfer pricing know and understand how transfer prices are determined in our company. • Responsibility centers (e.g., profit centers) affected by transfer pricing have access to the relevant data (e.g., costs) that affect transfer prices. • Our company keeps detailed records on our transfer pricing system. • Responsibility centers (e.g., profit centers) affected by transfer pricing have unlimited access to documentation on our transfer pricing system. Examples/quotes from interview data: • There is transparency in the plants and the sales units (Firm A) • There is transparency in the legal entities (Firm B) • Transfer pricing methods and markups are public information within the group (Firm B)
Global Transparency	*General definition*: (Decentralized) management understand the role of (tax compliant) transfer prices in the broader context, i.e., the overall company perspective *Operationalization for the questionnaire*: • Responsibility centers (e.g., profit centers) affected by transfer pricing know and understand the achieved internal objectives of transfer pricing in our company. • Responsibility centers (e.g., profit centers) affected by transfer pricing know and understand the achieved external objectives of transfer pricing in our company. • Our transfer pricing system helps to clarify the value creation of each responsibility center. • Due to our transfer pricing system, we are able to compare the financial performance of the responsibility centers. *Examples/quotes from interview data:* • There is no global transparency since the ERP systems are not connected. There is no transparency about value chain profitability (Firm A) • There is global transparency across business sectors and business divisions (Firm C)
Flexibility	*General definition*: Flexibility refers to the ability to disregard the internal transfer pricing policies and to flexibly handle the determination of transfer prices in particular cases *Operationalization for the questionnaire*: • Our transfer pricing system strictly complies with internal guidelines on transfer pricing. • In particular cases, we can disregard our internal guidelines on transfer pricing to determine transfer prices. • In particular cases (e.g., major order), our transfer pricing is flexibly handled. • There are no exceptions to our internal guidelines/regulations on transfer pricing. *Examples/quotes from interview data:* • Flexibility is rather low. Only a small minority of internal transactions are allowed to deviate from our transfer pricing policy. Such deviations must be discussed and agreed upon by the corporate tax department (Firm B) • There is almost no possibility to deviate from our transfer pricing policy; besides, there is a strong tendency over the previous years to rule out any deviations from the transfer pricing policy (Firm C)

Variable	
Perceived TPS Success	*General definition*: Perceived transfer pricing system success is the assessment of overall satisfaction with the tax compliant transfer pricing system and, in particular, the satisfaction with how tax compliant transfer prices fulfill management control objectives *Operationalization for the questionnaire*: • Overall, we are very satisfied with our transfer pricing system. • Overall, the benefits of our transfer pricing system outweigh the costs. • Our transfer pricing system complies completely with tax regulations. • Overall, our transfer pricing system achieves completely our internal objectives for transfer pricing. • Overall, our transfer pricing system achieves completely our external objectives for transfer pricing. *Examples/quotes from interview data:* • Success is defined by tax compliance, good decision-making and few conflicts (Firm A, B and C) • We are fairly pleased with our transfer pricing system since it works: there are only few conflicts with tax authorities and at the same time, the transfer pricing system doesn't disturb management control and business decision-making (Firm C)

Table 3 provides (general) definitions, an operationalization (used in the questionnaire) and practical examples of all variables. Those items used in the second step of our baseline model (initial step-wise procedure of first performing PCA and second, testing our hypotheses based on the PLS technique) are highlighted in gray.

Table 4. Validity and reliability measures of variables used in the PLS analysis

Variable	Composite reliability	Average variance extracted	Maximum shared variance
TPS Integration	0.752	0.504	0.229
Repair	0.855	0.746	0.368
Internal Transparency	0.895	0.682	0.389
Global Transparency	0.833	0.716	0.086
Flexibility	0.724	0.510	0.075
Perceived TPS Success	0.893	0.626	0.389

Table 4 reports validity and reliability measures for all of the variables used in the PLS analysis. The first column shows the composite reliability, and the second column shows the average variance extracted of a variable. Column three shows each variable's highest shared variance with any of the other variables.

Table 5. Descriptive statistics

Panel A: Descriptive statistics for the untransformed variables

Variable	Observations	Mean	Std Dev	Min	Max
TPS Integration	38	5.00	1.31	2.00	7.00
Repair	38	4.76	1.38	2.50	7.00
Internal Transparency	38	4.53	1.49	1.75	6.75
Global Transparency	38	3.84	1.42	1.00	7.00
Flexibility	38	4.18	1.63	1.00	7.00
Perceived TPS Success	38	5.08	1.12	2.00	6.80

Panel B: Descriptive statistics for the standardized variables

Variable	Observations	Mean	Std Dev	Min	Max
TPS Integration	38	0.00	0.71	-1.71	1.08
Repair	38	0.00	0.84	-2.08	1.59
Internal Transparency	38	0.00	0.83	-1.62	1.23
Global Transparency	38	0.00	0.85	-1.72	1.90
Flexibility	38	0.00	0.80	-1.57	1.39
Perceived TPS Success	38	0.00	0.79	-2.19	1.23

Panel C: Sampling of firms along formalization type and level of TPS Integration

Formalization Type	Level of TPS Integration	
	Low TPS Integration (n=20)	High TPS Integration (n=18)
Coercive	65%	28%
Enabling	35%	72%
Total	100%	100%

Panel D: Pearson correlation coefficients

	1)	2)	3)	4)	5)	6)
1) TPS Integration	1					
2) Internal Transparency	0.388**	1				
3) Flexibility	0.183	0.061	1			
4) Repair	0.336**	0.426***	0.172	1		
5) Global Transparency	0.246	-0.054	0.274*	0.293*	1	
6) Perceived TPS Success	0.478***	0.624***	0.033	0.607***	-0.039	1

Table 5 presents descriptive statistics for the untransformed (Panel A) and the standardized variables (Panel B) as well as the sampling of firms along formalization type and level of TPS integration (Panel C) and correlation statistics (Panel D). All statistics are presented for the full sample of 38 firms. Panel C reports bivariate Pearson correlation coefficients.

***, ** and * indicate statistical significance at the 1 percent, 5 percent and 10 percent levels for a two-tailed test of statistical significance, respectively.

Table 6. Results of the PLS analysis

Panel A: Results for hypotheses H1 and H2a-H2d					
Paths to	Paths from				
	TPS Integration	std. error	t-value	p-value	mult. R^2
Repair	0.336**	0.178	1.895	0.029	0.113
Internal Transparency	0.388***	0.157	2.465	0.007	0.151
Global Transparency	0.246*	0.175	1.408	0.080	0.061
Flexibility	0.183	0.171	1.068	0.143	0.033
Perceived TPS Success	0.263*	0.170	1.547	0.061	

Panel B: Results for hypotheses H3a-H3d					
Paths from	Paths to				
	Perceived TPS Success	std. error	t-value	p-value	Effect size f^2
Repair	0.450***	0.136	3.302	0.000	0.360
Internal Transparency	0.321**	0.160	2.005	0.022	0.181
Global Transparency	-0.203	0.178	1.141	0.127	0.082
Flexibility	-0.057	0.113	0.503	0.308	0.007
TPS Integration	0.263*	0.170	1.547	0.061	0.133
Mult. R^2	0.605				

Panel A of Table 6 presents path coefficients and significance levels from the PLS analysis based on bootstrapping with 5,000 drawings for the first two sets of hypotheses (H1 and H2a-d). Panel B of Table 6 presents the results for the third set of hypotheses (H3a-d) and additionally reports the effect size f^2.

***, ** and * indicate statistical significance at the 1 percent, 5 percent and 10 percent levels, respectively, for a one-tailed test of statistical significance.

Table 7. Results of the PLS analysis with TPS Conflicts instead of Perceived TPS Success

Panel A: Results for hypotheses H1 and H2a-H2d					
Paths to	Paths from				
	TPS Integration	std. error	t-value	p-value	mult. R^2
Repair	0.336**	0.177	1.904	0.028	0.113
Internal Transparency	0.388***	0.155	2.507	0.006	0.151
Global Transparency	0.246*	0.172	1.429	0.077	0.061
Flexibility	0.183	0.169	1.080	0.140	0.033
TPS Conflicts	-0.129	0.221	0.584	0.280	

Panel B: Results for hypotheses H3a-H3d					
Paths from	Paths to				
	TPS Conflicts	std. error	t-value	p-value	Effect size f^2
Repair	0.160	0.231	0.694	0.244	0.023
Internal Transparency	-0.434***	0.207	2.092	0.018	0.166
Global Transparency	0.016	0.273	0.057	0.477	0.000
Flexibility	-0.082	0.163	0.501	0.308	0.008
TPS Integration	-0.129	0.221	0.584	0.280	
Mult. R^2	0.212				

Panel A of Table 9 presents path coefficients and significance levels from the PLS analysis based on bootstrapping with 5,000 drawings (H1 and H2a-d). Panel B of Table 9 presents the results for the third set of hypotheses (H3a-d) and additionally reports the effect size f^2.

***, ** and * indicate statistical significance at the 1 percent, 5 percent and 10 percent levels for a one-tailed test of statistical significance, respectively.

Table 8. Results of the OLS regression

(1)	Coefficient	std. error	t-value	p-value
TPS_integration	0.291**	0.139	2.090	0.044
Repair	0.411***	0.119	3.450	0.002
Internal_transparency	0.306**	0.125	2.440	0.020
Global_transparency	-0.188	0.115	-1.640	0.109
Flexibility	-0.056	0.114	-0.490	0.625
Mult. R^2	0.605			

(2)	Coefficient	std. error	t-value	p-value
TPS_integration	0.530***	0.160	3.310	0.002
Mult. R^2	0.229			

(3)	Coefficient	std. error	t-value	p-value
TPS_integration	0.407**	0.188	2.170	0.036
Mult. R^2	0.113			

(4)	Coefficient	std. error	t-value	p-value
TPS_integration	0.451**	0.176	2.560	0.015
Mult. R^2	0.151			

(5)	Coefficient	std. error	t-value	p-value
TPS_integration	0.294	0.190	1.550	0.130
Mult. R^2	0.061			

(6)	Coefficient	std. error	t-value	p-value
TPS_integration	0.205	0.181	1.130	0.265
Mult. R^2	0.034			

Table 10 reports ordinary least squares coefficient estimates, standard errors, t-values, p-values and significance levels for equations (1) – (6).

***, ** and * indicate statistical significance at the 1 percent, 5 percent and 10 percent levels, respectively, for a two-tailed test of statistical significance. Coefficient estimates in Table 10 are specified by the following equations:

(1) $TPS\_success = \beta_1 * TPS\_integration + \beta_2 * Repair + \beta_3 * Internal\_transparency + \beta_4 * Global\_transparency + \beta_5 * Flexibility + \varepsilon$

(2) $TPS\_success = \beta_1 * TPS\_integration + \varepsilon$

(3) $Repair = \beta_1 * TPS\_integration + \varepsilon$

(4) $Internal\_transparency = \beta_1 * TPS\_integration + \varepsilon$

(5) $Global\_transparency = \beta_1 * TPS\_integration + \varepsilon$

(6) $Flexibility = \beta_1 * TPS\_integration + \varepsilon$

Table 9. Overview of the sample companies

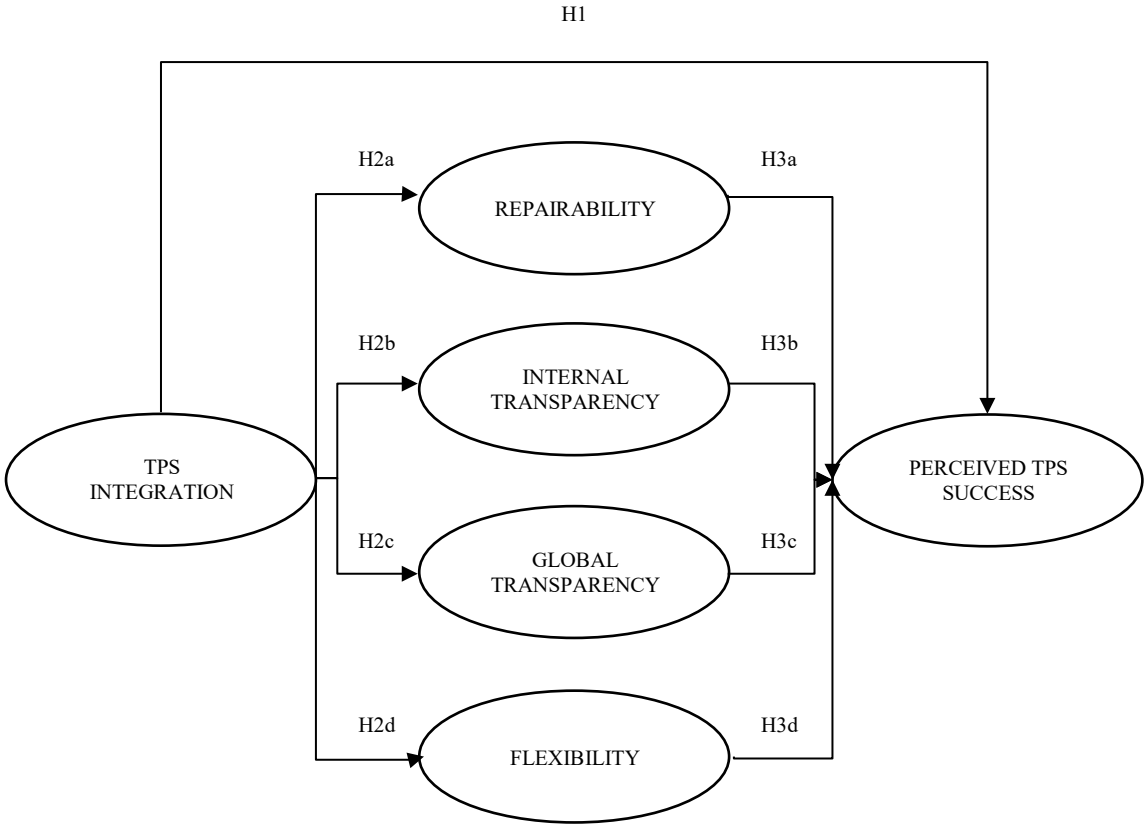
Panel A: Overview of the sample companies by organizational structure

	A	B	C
Firm size (sales in 2015)	Approx. 35 billion CHF	Approx. 3 billion CHF	Approx. 76 billion CHF
Internationalization	• Revenues in various jurisdictions and currencies • Approx. 70 percent of sales generated in foreign countries	• Revenues in various jurisdictions and currencies • Approx. 80 percent of sales generated in foreign countries	• Revenues in various jurisdictions and currencies • Approx. 80 percent of sales generated in foreign countries
Organizational structure of the firm	• 4 global divisions • Each division is comprised of various business units (BU) • Each BU is comprised of various functional centers • Product selling and system selling	• 2 global divisions • No division managers, divisions are managed by the board • Each division is comprised of various functional centers	• 4 global divisions • Each business sector is comprised of various business units (BU) • Each business unit is comprised of various functional centers
Organizational structure of the value chain	• Production centers, sales and distribution centers, service centers	• Production center, service center, product center, sales center	• Entrepreneur, contract manufacturer, service provider, distributor

Panel B: Overview of the sample companies by transfer pricing system

	A	B	C
Internal transfer pricing guidelines	• Internal transfer pricing guidelines that require compliance with the arm's length principle	• Detailed and comprehensive internal transfer pricing guidelines	• Detailed and comprehensive internal transfer pricing guidelines
Transfer pricing objective	• Tax compliance as most important objective • Enhance decentralized decision-making	• Tax compliance as most important objective • Facilitate decentralized decision-making	• Tax compliance as most important objective • No distortion of decentralized decision-making
Basic structure	• Transfer prices are negotiated between the profit centers • Product selling: transfer prices are primarily determined by the production center • System selling: transfer prices are primarily determined by the sales center	• Transfer prices for the production centers are determined based on standard costs plus a markup • Transfer prices for the sales centers are determined based on the resale price minus a margin • The residual across the supply chain is allocated to the product center	• Transfer prices for the contract manufacturers and service providers are determined based on standard costs plus a markup • Transfer prices for the distributors are determined based on the resale price minus a margin • The residual across the supply chain is allocated to the entrepreneur

Figure 1: Structural equation model



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